

Application No.: 09/588,242

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Docket No.: 249212024500

REMARKS/ARGUMENTS

In the Advisory Action mailed on July 6, 2004, the Examiner responded to Applicants arguments presented in the Amendment under 37 CFR 1.116 filed on June 14, 2004. Applicants request reconsideration in view of the following remarks.

I. Claims 1, 21 and 33

In the Advisory Action, the Examiner asserted, "the controller creates [t]he log entry from the message received [from] the processor, and queues it in the log before sending to the storage media 21." Applicants assert that U.S. Patent No. 6,170,063 (the Golding reference) discloses that a processor and not the controller creates the log entries in the log.

In particular, the section of the Abstract to which the Examiner cites states, "[periodically, the controller reads the timestamps of the messages in the log ... the controller writes the data segment contained in the message to the storage medium at the specified address in the message." (Emphasis Added). Note that this cited section only discloses that the controller reads from the log and writes to the storage medium. Prior to the section cited by the Examiner, the Abstract discloses that the controller receives write messages from processors, each write message includes a timestamp, and the write messages are then stored in the log. Thus, since the write message received by the controller from a processor already includes a timestamp, which is then stored in the log, it is the processor and not the controller that creates the log entries in the log. The controller reads the log entries in the log, but does not create the log entries.

In contrast, claim 1 recites a circuit that creates a log entry and queues log entries, where a log entry is an association of write commands with time information. Claim 21 recites a log-assisted disk that creates a log entry and queues log entries in a log queue. Claim 33 recites that log entries are formed and queued at the log-assisted disk.

Thus, Applicants assert claims 1, 21 and 33 are allowable over the Golding reference.

II. Claims 9 and 20

Applicants request entry and allowance of claims 9 and 20.

III. Claim 17

In the Amendment filed on June 14, 2004, Applicants asserted that U.S. Patent No. 5,008,786 (the Thatte reference) disclosed taking periodic checkpoints, and when a system failure

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occurs, rolling the system back to the checkpointed state. In contrast, claim 17 recites, in part, "writing the log entries having timestamps later than the point in time of the snapshot to the storage device." (Emphasis Added).

In the Advisory Action, the Examiner asserted that in the Thatte reference "newly modified data (at the checkpoint state) that was not in the archived state is copied to the archival medium." Applicants assert that the process of maintaining an archival medium disclosed in the Thatte reference does not disclose each and every element of claim 17.

In particular, the portion of the Thatte reference cited by the Examiner discloses that an archive of the last checkpointed state can be maintained on another storage medium (the archival medium). When the next checkpoint is taken, the archival medium is updated by only copying those pages of the last checkpointed state that are dirty with respect to the last archived state. Note that when the archival medium is updated, the previously checkpointed state is not written again to the archival medium.

In contrast, claim 17 recites that the snapshot written to the storage device was taken at a point in time earlier than the given time. Note that in the Thatte reference when the checkpointed state is first archived to the storage medium (when the given time corresponds to the time of the initial archive), the initial checkpointed state being written to the storage medium was taken at the given time and not at a time earlier than the given time. When the archival medium is update (when the given time corresponds to the time of the update and the earlier time corresponds to the time of the initial archive), the initial checkpointed state (the snapshot taken at the time of the archive) is not written to the archival medium. Instead, only those pages of the last checkpointed state that are dirty are copied. Indeed, after the time of the initial archive, a snapshot is never copied to the archival medium.

Thus, Applicants assert that claim 17 is allowable over the Thatte reference.

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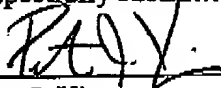
IV. Conclusion

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 249212024500. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: July 13, 2004

Respectfully submitted,

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